PRODUCT DATA

Fusion-LN Data Acquisition Hardware

Fusion-LN Data Acquisition (DAQ) hardware is a versatile system of modular hardware consisting of modules, front panels and frames. It is the next-generation sound and vibration DAQ from HBK.

Fusion-LN can be used for data acquisition as single modules, in distributed systems of modules or, for high channel-count applications, in frames.*

Fusion-LN is ideal for use with HBK software solutions such as BK Connect®, Tescia® and PULSE™ LabShop. Fusion-LN is also compliant with the openDAQ™ standard.

Uses, applications and features

Uses and applications

- Multichannel sound and vibration data acquisition
- Research and development
- General sound and vibration measurement and analysis
- Industrial floor monitoring
- Aviation wind tunnel testing
- Gas turbine testing
- Noise source identification
- Sound power determination
- Electroacoustics
- Acoustic material testing
- Structural dynamics
- Machine analysis and diagnostics
- Source path contribution
- Calibration systems

Features

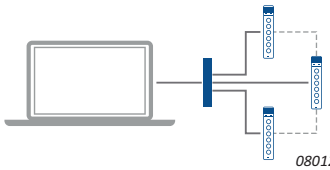
- Plug and play modules
- Single-module full measurement system with signal-conditioning, data acquisition and network connection
- Scalable: Stand-alone devices and distributed, semi-distributed or centralized setups in frames/racks*
- Flexible: The same device can be used in a single-module system or connected with other modules to support 1000+ channels
- Interchangeable front panels
- openDAQ™ compliant
- Includes Dyn-X and phase matching
- Data transfer, power supply (PoE) and synchronization (PTP) via a single LAN cable
- Co-existence and backwards compatible with LAN-XI modules. Existing systems can be upgraded and expanded over time
- Double bandwidth compared to LAN-XI
- Compatibility mode for streaming to older versions of BK Connect, PULSE LabShop and Tescia
- Record to SD card*
- Automatic detection of hardware and transducers with support of IEEE 1451.4-capable TEDS transducers
- Extremely low noise floor

* Available in future releases through firmware updates.

Fusion-LN DAQ hardware covers a range of devices that are extremely flexible and can be easily reconfigured, as requirements demand. The same device can be used stand-alone in the field with a DC power supply as well as part of a distributed measurement system with power over Ethernet (PoE). Additionally, modules can be easily reconfigured with different connectors using interchangeable front panels.

Fusion-LN devices enable you to build distributed systems where the DAQ hardware is close to the measurement object and minimize the requirements for transducer cables – all you need between the DAQ devices and the PC are LAN cables and an Ethernet switch. A single LAN cable transfers data, provides power (PoE) and synchronizes samples (PTP).

Table 1 *Configuration examples*

Single-module System	 *080121/2*	**Single-module DAQ** • Any single data acquisition module • LAN cable: PoE, data transfer • Options: Battery module, interchangeable front panel
Distributed System	 *080122/1*	**Single-module DAQs with network switch and LAN cable for PoE, PTP sync between modules** • Any number of DAQ modules • Network switch • LAN cable: PoE, PTP sync, data transfer • Options: Battery modules, interchangeable front panels

Synchronizing in a multi-device system

For most sound and vibration applications, sample-synchronous and phase-matched measurements are a must. If no synchronization method is used, two or more sampling systems will drift apart over time. Even the best clock systems available will, in less than 10 seconds, drift so far apart that the sample correlation will drop to an unacceptable level for high-quality sound and vibration measurements.

PTP synchronization

Precision time protocol (PTP) makes it possible to synchronize the clocks in the system components with sub-microsecond accuracy using the same LAN connection used for transferring the measurement data.

PTP synchronization measures the delays between individual PTP components using a dedicated algorithm (see the IEEE 1588 standard*). By doing this, all delays can be accurately measured, and the individual clocks can be set to exactly the same time. On top of this, the phase drift of the 'follower' clocks is continuously measured and counter-adjusted by a control loop, which adjusts the follower clocks' speed.

The Fusion-LN device

Each Fusion-LN module has a display and a control button that you can toggle to show device ID, IP address, PTP status and device status and error messages. The display automatically changes if an error arises.

Each channel port has a light emitting diode (LED) colour-coded to indicate its condition:

- Green – active input channel
- Red – input overload; cable, transducer or conditioning fault
- Yellow – transferring TEDS data
- Blue – generator output
- Blue/Red (alternating) – generator overload or cable short-circuit

Together, the display and LED can help you to locate a specific channel or device in a system to determine whether the transducers are in good working order or the system is functional and configured correctly.

When used with TEDS (transducer electronic datasheet) transducers, the clear indication of a selected channel greatly simplifies system setup.

IP addresses

Fusion-LN devices can be configured to use dynamic or static IP addressing. To do so, use the control button and display on the module or access the web-based interface:

- If a device is set up to use a dynamic IP address (default), the device automatically receives an IP address from a DHCP server on the network. If the server is not found, as in the case where the device is connected directly to a PC, it will use 'link-local' ('auto-IP'), with an address in the 169.254.xxx.xxx range. As Windows®-based PCs default to do the same, the Fusion-LN device and PC can easily communicate.
- If static addresses are selected, they can be changed later using the device's web page or the setup program of your HBK software.

Web-based interface

Each device has a web-based interface that you can access using a web browser. Use the interface to find information about the device, make changes to its configuration, update its firmware and more.

* IEC 61588/IEEE 1588-2008, Precision Clock Synchronization Protocol for Networked Measurement and Control Systems.

Power over Ethernet (PoE)

PoE is implemented according to IEEE 802.3at. With a suitable network switch, the power needed for single devices is carried by screened shielded twisted pair (S/STP or S/FTP) CAT6 LAN cables rather than by separate power cables. This minimizes the number of cables required and results in lower cost, less downtime, easier maintenance and greater installation flexibility. Switches with PoE and PTPv2 support can be used.

Overload protection

Input channels have an input voltage up to 10 V_{peak} and extended range up to 31.6 V_{peak}, with an absolute maximum input of 60 V_{peak} without damage.

Overload indications for input channels include:

- Signal overload with adjustable detection level
- CCLD overload: detection of cable break, short-circuit or CCLD transducer working point fault
- Microphone preamplifier overload: detection of microphone preamplifier current consumption too high or too low
- Common mode voltage overload: relevant when input coupling is floating

See the Specifications for details.

If the signal input level significantly exceeds the measuring range, the input will go into protection mode for at least 0.5 s until the signal falls again. While protected, the input is partly switched off and the input impedance is greatly increased. (The measured value will be strongly attenuated but still detectable.)

Conditioning error detection

Fusion-LN uses two methods to detect transducer cable breaks and incorrect conditioning. For microphones, their supply current is monitored; for CCLD accelerometers (or microphones using CCLD preamplifiers), the supply voltage is monitored. If conditioning errors, such as a broken cable, are detected, an error is indicated as an overload on the specific channel.

Ground-loop noise suppression

You can set the input to floating or grounded in the analysis software. The floating/grounded, differential input design and the fact that all external connections (LAN, power supply) are galvanically isolated in the module provide optimal ground-loop noise suppression.

Dyn-X – Single range from 0 to 160 dB

Dyn-X is a technology that uses stacked analogue-to-digital converters (ADCs) to give the devices a single input range from 0 to 10 V_p and a useful analysis range exceeding 160 dB.

Dyn-X is on all input channels.

Fig. 1 *Simplified block diagram of Dyn-X principle*

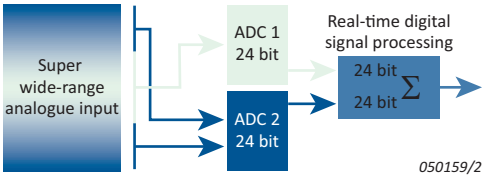
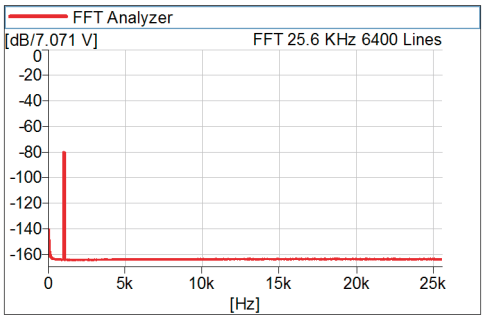


Fig. 2 *160 dB analysis in one range. An FFT measuring a 1 kHz signal 80 dB below full scale (7 V_{rms}). Note that noise and all spurious components measure 160 dB below full-scale input*



With Dyn-X, the entire measurement and analysis chain matches or outperforms the transducer used for measurement. It eliminates the need for an input attenuator for ranging the analysis system input to the transducer output. All you need to do to get excellent results is choose the right transducer. Covering everything in one input range, there is no worry about overloads, under-ranged measurements or discussions about the validation and verification of measurement results. With no need for trial runs in order to ensure that the input range is correct, you have a far greater certainty of getting measurements right the first time.

Fig. 3 *Examples of measurement situations and applications where Dyn-X technology can be usefully applied*

SITUATION	APPLICATION
When time is limited	• Test cells • Wind tunnels • Road testing • Flight testing
Where there is minimal user interaction	• Road testing • Field testing
When testing is unattended	• Production line • Noise monitoring
When signal levels are unknown	• Run up/down • Field testing
When measuring in high-dynamic applications	• Impulsive testing, room acoustics • Run up/down • Electroacoustics • Structural measurements
When an overview of the whole measurement scenario is difficult	• Measuring many channels • Combining signal types: vibration, sound, temperature, pressure, rpm, etc. • Test cells • In-car testing • Sound, vibration and other parameters involved
When you need to get the measurement right the first time	• Crash testing • Destructive testing • Heavy machinery – run up/coast down

Backwards compatible

Fusion-LN is designed with backwards compatibility with legacy LAN-XI DAQ devices for sustained productivity with your current system and a seamless transition to future systems.

- All Fusion-LN devices can be integrated in a distributed system that includes LAN-XI devices.
- A 'Compatibility mode' option that you can switch on within Fusion-LN, enables streaming to older versions of BK Connect, PULSE LabShop* and Tescia software.

Flexible – One DAQ for many test setups

All Fusion-LN modules are fully compatible with more than one front panel allowing you to easily swap the default front panel, which is supplied with the module, with an optional front panel. This means that you can quickly transform your test setup without investing in a completely new system. It also results in fewer patch panels, less cable 'spaghetti', fewer cable adaptors and faster system setup.

Visit hbkworld.com to find more information about the individual front panels.

Battery operation

For stand-alone operation, Fusion-LN works together with LAN-XI Battery Type 2831-A, a rechargeable Li-ion battery module with an output voltage of 14.8 V and a capacity of 6400 mAh.

The battery is connected to the DAQ module using ZH-0686, a single-module-to-battery power adaptor included with Type 2831-A. The adaptor has both charge and DC input connectors. One battery module can power a DAQ module for over seven hours.†

Uninterruptible power supply

Once connected to a DAQ module via the power adaptor, the battery module can be used as the sole power source to the DAQ module or act as an uninterruptible power source (UPS) providing backup power to the DAQ module if external power is temporarily lost (for example, in a car when the ignition is switched off).

Charging

The battery module can be charged using an optional external DC charger, ZG-0858. When in a frame, you can charge via AC (mains) or DC (>12.5 V, 12 V car with the engine running or with the external charger).

openDAQ™ compliant

openDAQ is an easy-to-use software development kit (SDK) created collaboratively by HBK and DEWESoft®, two leaders in the test and measurement industry. It enables users to easily find, set up, and collect data from any openDAQ-compatible device, using popular programming environments such as C++, C#, Python®, and LabVIEW™. The openDAQ SDK is versatile, designed to work across various operating systems including Linux®, Windows, and macOS®, making it accessible from any host PC.

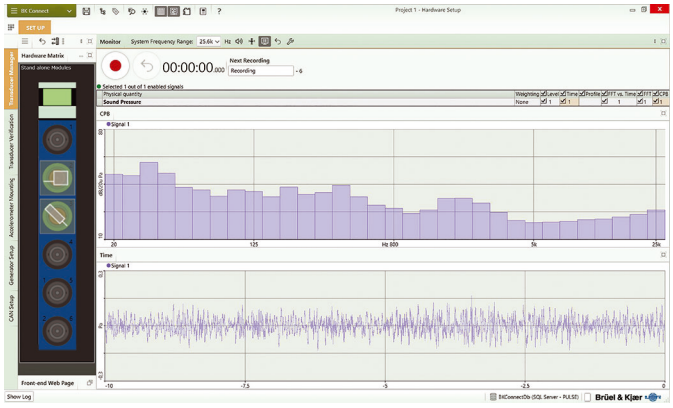
openDAQ compliance refers to a set of standards and specifications designed to ensure interoperability, reliability, and functionality of devices and software within the openDAQ ecosystem. For more information, go to openDAQ.com.

DAQ and analysis software interface

A number of HBK software programs provide an interface to your Fusion-LN DAQ, this includes BK Connect, Tescia, and PULSE LabShop. These interfaces enable you to set up and monitor your DAQ hardware directly in the analysis software‡. For example:

- BK Connect Hardware Setup: Connect to your device and set up your channels while real-time monitors allow you to check that everything is set up properly before data acquisition.
- Tescia and PULSE LabShop: Level meters allow you to easily monitor whether your system is working as intended and, if not, where any attention is needed for correcting transducer mounting or cabling.

Fig. 4 *Example of hardware interface: BK Connect Hardware Setup showing the Hardware Matrix with a graphical representation of the Fusion-LN device and the real-time Monitor*



* With older PULSE LabShop versions, Fusion-LN firmware updates may only be available via the module's web page.
† When frame support is enabled, Type 2831-A can be mounted in a frame and provide over 40 minutes of operation for all modules in the frame, or act as a UPS. Two battery modules can be used simultaneously for over 80 minutes of continuous power for a full frame.
‡ Built-in analogue self-test available via firmware update.

	The CE marking is the manufacturer's declaration that the product meets the requirements of the applicable EU directives RCM mark indicates compliance with applicable ACMA technical standards – that is, for telecommunications, radio communications, EMC and EME. China RoHS mark indicates compliance with administrative measures on the control of pollution caused by electronic information products according to the Ministry of Information Industries of the People's Republic of China. WEEE mark indicates compliance with the EU WEEE Directive.
Safety	EN/IEC 61010-1 and ANSI/UL 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use.
EMC Emission	EN/IEC 61326: Electrical equipment for measurement, control and laboratory use – EMC requirements . EN/IEC 61000-6-3: Generic emission standard for residential, commercial and light industrial environments. CISPR 32: Electromagnetic compatibility of multimedia equipment – emission requirements. Class B.
EMC Immunity	EN/IEC 61326: Electrical equipment for measurement, control and laboratory use – EMC requirements. EN/IEC 61000-6-1: Generic standards – Immunity for residential, commercial and light industrial environments. EN/IEC 61000-6-2: Generic standards – Immunity for industrial environments. All devices meet ESD performance with criterion C. Meets immunity requirements for an Industrial Electromagnetic Environment.
Temperature	IEC 60068-2-1: Environmental testing – Cold IEC 60068-2-2: Environmental testing – Heat Ambient Operating Temperature: –10 to +55 °C (14 to 131 °F) Storage Temperature: –25 to +70 °C (–13 to +158 °F)
Humidity	IEC 60068-2-78: Damp Heat: 93% RH (non-condensing at 40 °C (104 °F))
Mechanical (non-operating)	IEC 60068-2-6: Vibration: 0.3 mm, 2 *g*, 10 – 500 Hz IEC 60068-2-27: Shock: 100 *g* IEC 60068-2-27: Repetitive shock: 1000 shocks at: 25 *g*
Enclosure	IEC 60529: Protection provided by enclosures: IP 31
Magnetic Field	EN/IEC 61000-4-8: 80 A/m

Notes:
- The above is only guaranteed using accessories listed in this document.
- For environmental specifications and compliance with standards for PCs, see the specifications given by their respective manufacturers.
- Emissions, which exceed the levels required by EN/IEC 61326-1, can occur when the device is connected to a test object.

EFFECT OF RADIATED AND CONDUCTED RF, MAGNETIC FIELD AND VIBRATION

Radiated RF: 80 – 2700 MHz, 80% AM 1 kHz, 10 V/m
Conducted RF: 0.15 – 80 MHz, 80% AM 1 kHz, 10 V
Magnetic Field: 30 A/m, 50 Hz
Vibration: 5 – 500 Hz, 12.7 mm, 15 m/s^2

Note: Input measured with shorted input. All values are root mean square (rms). Conducted RF immunity on all channels is only guaranteed using an external connection from measuring ground to chassis terminal

INPUT/OUTPUT	RADIATED RF	CONDUCTED RF	MAGNETIC FIELD	VIBRATION
Direct/CCLD	<250 µV	<300 µV	<4 µV	<80 µV
Preamplifier	<250 µV	<50 µV	<8 µV	<80 µV
Charge (1 nF transducer)	<10 pC	<3 pC	<0.3 pC	<3 pC

Specifications – Fusion-LN 3070-A-060

POWER REQUIREMENTS

DC Input: 10 – 32 V DC
Connector: LEMO, FFA.00.113, ground on shield
Power Consumption:
- **DC Input:** <15 W
- **Typical Operating Time on Battery Type 2831-A:** > 7 hours
- **Supply via PoE:** According to IEEE 802.3at, max. cable length 100 m (328 ft)

Temperature Protection: Temperature sensor limits module's internal temperature to 80 °C (176 °F). If temperature exceeds limit, system will shut down the module

LAN

Connector Type: RJ45
Network Speed: 1 Gb

DIMENSIONS AND WEIGHT

Height: 132.6 mm (5.22 in)
Width: 27.5 mm (1.08 in)
Depth: 248 mm (9.76 in)
Weight: 750 g (1.65 lb)

ANALOGUE INPUT CHANNELS (DYN-X)

Frequency Range		DC to 102.4 kHz Lower frequency range can be set in data acquisition software
Sampling Rate		262144 samples/s
A/D Conversion		2 × 24 bit
Data Transfer		24 bit
Input Voltage Range		10 V_{peak} Extended Range: 31.6 V_{peak}
Input Signal Coupling	**Differential**	Signal ground is 'floating' (1 MΩ re: chassis)
	Single-ended	Signal ground is connected to chassis ('Grounded')
Input Impedance		Direct, Microphone: 1 MΩ || < 300 pF
		CCLD: >100 kΩ || < 300 pF
Absolute Maximum Input		±60 V_{peak} without damage

High-pass Filters		– 0.1 DB *	–10% @ **	–3 DB @ **	SLOPE
* Defined as the lower frequency, f_L, for guaranteed fulfilment of –0.1 dB accuracy in 10 V_{peak} range ** Defined as the nominal –10%/3 dB filter frequency	0.1 Hz – 10% analogue high-pass filter 0.7 Hz – 0.1 dB digital high-pass filter	0.5 Hz 0.7 Hz	0.1 Hz 0.15 Hz	0.05 Hz 0.073 Hz	– 20 dB/dec.
	1 Hz – 10% digital high-pass filter 7 Hz – 0.1 dB digital high-pass filter	5 Hz 7 Hz	1.0 Hz 1.45 Hz	0.5 Hz 0.707 Hz	– 20 dB/dec.
	22.4 Hz – 0.1 dB analogue high-pass filter	22.4 Hz	15.8 Hz	12.5 Hz	– 60 dB/dec.
	Intensity filter (analogue)	115 Hz	23.00 Hz	11.5 Hz	– 20 dB/dec.

Absolute Amplitude Precision, 1 kHz, 1 V_{input}	±0.05 dB, typ. ±0.01 dB

Amplitude Linearity (linearity in one range)	
0 to 80 dB below full scale	±0.05 dB, typ. ±0.01 dB
80 to 100 dB below full scale	±0.2 dB, typ. ±0.02 dB
100 to 120 dB below full scale	typ. ±0.02 dB
120 to 140 dB below full scale	typ. ±0.02 dB
140 to 160 dB below full scale	typ. ±1 dB

Overall Frequency Response re 1 kHz, from lower limit fL to upper limit fU f_L is defined as the lower frequency for guaranteed fulfilment of –0.1 dB accuracy in 10 V_{peak} range (see under High-pass Filters) f_U is defined as the chosen frequency span. DC (f_L = 0)	±0.1 dB ±0.3 dB in 31.6 V range

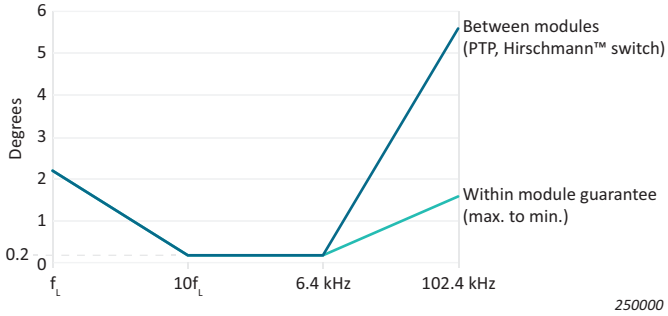
Noise * Measured lin. 10 Hz to 51.2 kHz or lin. 10 Hz to 102.4 kHz: (Input terminated by 50 Ω or less)	INPUT RANGE	GUARANTEED		TYPICAL	
		LIN*	1 kHz	LIN*	1 kHz
Signal level <316 mV_{peak} 10 Hz to 25.6 kHz 10 Hz to 51.2 kHz 10 Hz to 102.4 kHz	10 V_{peak}	<4 μV_{rms} <6 μV_{rms} <8 μV_{rms}	<25 $nV_{rms}/\sqrt{Hz}$	<3 μV_{rms} <4.5 μV_{rms} <6 μV_{rms}	<19 $nV_{rms}/\sqrt{Hz}$
Signal level >316 mV_{peak} 10 Hz to 25.6 kHz 10 Hz to 51.2 kHz 10 Hz to 102.4 kHz	10 V_{peak}	<60 μV_{rms} <85 μV_{rms} <120 μV_{rms}	<375 $nV_{rms}/\sqrt{Hz}$	<50 μV_{rms} <71 μV_{rms} <100 μV_{rms}	<313 $nV_{rms}/\sqrt{Hz}$
Signal level <1 V_{peak} 10 Hz to 25.6 kHz 10 Hz to 51.2 kHz 10 Hz to 102.4 kHz	31.6 V_{peak}	<20 μV_{rms} <29 μV_{rms} <40 μV_{rms}	<125 $nV_{rms}/\sqrt{Hz}$	<15 μV_{rms} <22 μV_{rms} <30 μV_{rms}	<95 $nV_{rms}/\sqrt{Hz}$
Signal level >1 V_{peak} 10 Hz to 25.6 kHz 10 Hz to 51.2 kHz 10 Hz to 102.4 kHz	31.6 V_{peak}	<200 μV_{rms} <285 μV_{rms} <400 μV_{rms}	<1250 $nV_{rms}/\sqrt{Hz}$	<150 μV_{rms} <215 μV_{rms} <300 μV_{rms}	<950 $nV_{rms}/\sqrt{Hz}$

Spurious-free Dynamic Range re Full-scale Input (Input terminated by 50 Ω or less) Spurious-free Dynamic Range is defined as the ratio of the rms full-scale amplitude to the rms value of the largest spurious spectral component (non-harmonic)	INPUT RANGE	TYPICAL
	10 V_{peak}	160 dB
	31.6 V_{peak}	140 dB

DC Offset re Full Scale Measured after automatic DC compensation at current temperature when changing from AC to DC coupling or changing input range when DC coupled	GUARANTEED	TYPICAL
	< – 90 dB	– 100 dB

Harmonic Distortion (all harmonics)	GUARANTEED	TYPICAL
	– 80 dB (– 60 dB in 31.6 V range)	– 100 dB @ 1 kHz (– 80 dB @ 1 kHz in 31.6 V range)

Crosstalk Between any two channels of a module or between any two channels in different modules, in 10 V input range only	FREQUENCY RANGE	GUARANTEED	TYPICAL
	0 – 102.4 kHz	– 100 dB	– 140 dB (– 90 dB in 31.6 V range)

Channel-to-channel Match (10 V_{peak} input range)		GUARANTEED	TYPICAL
	Maximum Gain Difference f_L is defined as the – 0.1 dB frequency of the high-pass filter	0.1 dB from lower frequency limit, f_L, to 102.4 kHz (0.4 dB at – 10% filter frequency)	±0.01 dB
	Maximum Phase Difference f_L is defined as the – 0.1 dB frequency of the high-pass filter		

Channel-to-channel Match (31.6 V_{peak} input range)		
	Maximum Gain Difference	0.6 dB from lower frequency limit, f_L, to 102.4 kHz (1 dB at – 10% filter frequency)
	Maximum Phase Difference	4° from lower frequency limit, f_L, to 102.4 kHz

Common Mode Rejection in 10 V_{peak} input range Values for 31.6 V_{peak} range are 10 dB lower		**GUARANTEED**	**TYPICAL**
	0 – 120 Hz	70 dB	80 dB
	120 Hz – 1 kHz	55 dB	60 dB
	1 – 51.2 kHz	30 dB	40 dB
	51.2 – 102.4 kHz	30 dB	40 dB
Absolute Max. Common Mode Voltage		±5 V_{peak} without damage	
		±4 V_{peak} without clipping	
		If common mode voltage exceeds the max. value, care must be taken to limit the signal ground current in order to prevent damage. Max. is 100 mA. The instrument will limit the voltage to the stated max. 'without damage' common mode value	
Anti-aliasing Filter At least 90 dB attenuation of those frequencies which can cause aliasing	Filter Type	3rd order Butterworth	
	–0.1 dB @	102.4 kHz	
	–3 dB @	256 kHz	
	Slope	–18 dB/octave	
Supply for Microphone Preamplifiers		±14.0 V, max. 100 mA per channel (max. 100 mA total/module)	
Supply for Microphone Polarization		200 V ±1 V, or 0 V (set per channel)	
Supply for CCLD		3.6 mA from 24 V source	
Tacho Supply		CCLD for Type 2981	
Analogue Special Functions		**Microphone Charge Injection Calibration (CIC)**: All modules with 7-pin LEMO support CIC via dedicated application software and automation interface **Transducers**: Supports IEEE 1451.4-capable transducers with standardized TEDS (up to 100 m (328 ft) cable length)	
Overload Detection		**Signal Overload**: Adjustable detection level ±1 V_{peak} to ±10 V_{peak}. Default level ±10 V_{peak} (CCLD mode ±7 V_{peak}) (31.6 V range: ±31.6 V) can be set in the analysis software's transducer database **CCLD Overload**: Detection of cable break or short-circuit + detection of CCLD transducer working point fault. Detection level: +2 V/20 V **Microphone Preamplifier Overload**: Detection of microphone preamplifier current consumption too high or too low. Detection level default 10 mA/1 mA Adjustable detection level 1 to 20 mA or 100 mA if disabled **Common Mode Voltage Overload**: Detection level: ±3.0 V	
Protection		If signal input level exceeds the measuring range significantly, the input will go into protection mode until the signal goes below the detection level again for at least 0.5 s. While in protection mode, the input is partly switched off and the input impedance is greatly increased. (The measured value will be strongly attenuated but still detectable.) In DC mode –10 V_{peak} range, the detection limit is ±12 V. In all other measuring modes (except CCLD), the limit is ±50 V_{peak} including DC component or ±12 V_{peak} AC. In CCLD mode, the limit is +25/–8 V_{peak}. In the 31.6 V range, the limit is ±50 V_{peak}.	

Ordering Information

3070-A-060 Fusion-LN 6-ch. Input Module, 102.4 kHz
Includes the following accessories:
- UB-2100-060: Detachable front panel with 6 × BNC input connectors
- ZG-0426: Power supply via mains (100 – 240 V)
- AO-1450: LAN Cable, shielded CAT 6, RJ 45 (M), 2 m (6.5 ft)

CALIBRATION SERVICES FOR DATA ACQUISITION MODULES

LNXI-CAF	Accredited Calibration, LAN-XI/Fusion-LN
LNXI-CAI	Initial Accredited Calibration, LAN-XI/Fusion-LN

Supported HBK Products

LAN-XI PLATFORM HARDWARE

Type 2831-A	Battery Module
ZG-0858	DC Power Charger, car utility connector to Type 2831-A

CABLING AND ADAPTERS

AO-0087-x-yyy*	Cable, coax single screen, BNC (M) to BNC (M), max. +85 °C (+185 °F)
AO-0414-x-yyy*	Cable, 7-pin LEMO (1B F) to 7-pin LEMO (1B M), max. +80 °C (+176 °F)
AO-0479-x-yyy*	Cable, 7-pin LEMO (1B M) to BNC (M), max. +80 °C (+176 °F)
AO-0531-x-yyy*	Cable, coax, 10–32 UNF (M) to BNC (M), max. +80 °C (+176 °F)
AO-0546	DC Power Cable, car utility connector to single module
JJ-0152	Adapter, T-shaped BNC (M) to dual BNC (F)
JP-0145	Adapter, BNC (M) to 10–32 UNF (F), straight

SENSORS

A wide range of HBK accelerometers, microphones, preamplifiers and sound intensity probes is available for use with HBK data acquisition systems. Support includes IEEE 1451.4-capable transducers with standardized TEDS.
For more information on HBK sensors, visit www.hbkworld.com/en/products/transducers.

SOFTWARE
- BK Connect
- Tescia
- PULSE LabShop

For more information on HBK DAQ and analysis software, visit www.hbkworld.com/en/products/software/daq.

* x = D (decimetres) or M (metres); yyy = length in decimetres or metres. Please specify cable length when ordering

2025-01

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hbkworld.com · info@hbkworld.com · Local representatives and service organizations worldwide

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